

PHONETICS AND PHONOLOGY

PHONEME AND ALLOPHONE

1. A hypothetical language has two vowel phonemes /a i/ and four consonant phonemes /b d m s/. All the words have two syllables of the form CVCV (consonant, vowel, consonant, vowel - e.g. /baba/). These phonemes have the following allophones:

/b/	[b] in all contexts
/m/	[m] in all contexts
/d/	[d], except intervocalically (between two vowels); when /d/ is intervocalic, it is realised as [z].
/s/	[s] in all contexts, except when it precedes [i]; when /s/ precedes [i], it is realised as [ʃ]
/a/	[a] in all contexts except before a nasal consonant; when /a/ precedes a nasal consonant, it is realised as [ã].
/i/	[i] in all contexts.

(a) Why are the following transcriptions *not* possible in this language?

- i. /daza/
- ii. [dama]
- iii. [bada]
- iv. /mãbi/
- v. /saʃi/
- vi. [ʃasa]

(b) When a speaker of this language visited Australia, she could very easily hear and say the difference between 'bee' and 'me' but not between 'see' and 'she'. Why do you think this might be so?

2. The purpose of this exercise is to demonstrate how languages build words from a small number of units (phonemes) that are structured into syllables that are structured into words.

The rules that a hypothetical language L uses to build up its vocabulary are as follows:-

Phonemes

- There are two consonants /p n/, and two vowels /i a/.

Syllables

- All syllables are open and of the form V, CV, CCV where C and V stand for 'consonant' and 'vowel'.
- In CCV syllables, the consonants must be different and /p/ precedes /n/.

Words

- Words are formed from stressed and unstressed syllables. Every word has to have only one stressed syllable. No word is longer than 3 syllables. The last syllable is stressed unless the first syllable begins with two consonants, in which case that syllable is stressed.

Phonetic rules

- In unstressed syllables, /p/ is realised as [f] and /n/ is realised as [m] when it is preceded by /p/. (NB: these rules apply in unstressed syllables only).

i.

- a. What are the two shortest words in the language?
- b. How many phonemes are there in the longest word in the language?
- c. Give ten examples that exemplify some of the different kinds of phonemic representations of two-syllable words. Mark the stressed syllable using a primary stress mark - for example: [fa'pa] means that the last syllable is stressed.

ii. Convert your phonemic forms in i(c) into phonetic forms.

iii. A person unfamiliar with this language refuses to believe that [p] and [f] could be allophones of one phoneme. Describe briefly two ways that you might persuade that person otherwise.

3. The purpose of this question is to show how loan words are often created as a result of the modifications imposed by the phonological structure of a native language; it is taken from Gussenhoven & Jacobs, 1998 *'Understanding Phonology'* Arnold: New York, pages 40-43).

The Hawaiian phoneme inventory is small consisting of 5 vowel phonemes and 8 consonant phonemes as follows.

Vowels

Consonants

i u

p k ʔ

e o

h

a

m n

w l

The only kinds of possible syllables in Hawaiian are V (vowel on its own), VV (two vowels together), CV, and CVV.

i. The Hawaiian loan-word for 'Merry Christmas' is /meli kalikimaka/. To what extent can the pronunciation of this loan word be explained in terms of the different phoneme inventories of Hawaiian and English?

Here is some more loan word data from Hawaiian:-

ʔalapaki

Albert

kikiki

ticket

kopa

soap

pia	beer
palaki	brush
kole	story
kola	school
waina	wine
laiki	rice
pele	bell
palaoa	flour
kokiaka	zodiac
kaukani	thousand
paama	palm
ʔelepani	elephant

ii. List the English consonants for which Hawaiian /p/ is used. What articulatory aspects do these have in common.

iii. What are the main ways in which English consonantal clusters are changed in Hawaiian?

iv. Explain the derivation of /palaoa/ for 'flour'.

v. What are the likely Hawaiian loan words for (a) false (b) fleet?

Note: Questions 4 and 5 are designed to show that phonological rules very often apply to *entire classes* of speech sounds.

4. Regular past tense formation in English depends on the final segment of the stem. How would you use features to describe the choice of /s/, /z/, or /əz/ (i.e. /s/ occurs after, /z/ occurs after.... etc.).

plural in:	/s/	/z/	/əz/
	cats	tins	passes
	taps	bees	buses
	laughs	dogs	witches
	baths	wells	sashes
	socks	ploughs	stages
	coughs	tabs	buzzes

5. In Turkish, the plural of a noun is marked by adding a /lVr/ suffix and the accusative by adding a /V/ suffix where V is a vowel. The actual vowel varies, however:

stem	plural	accusative	
dal	dallar	dalu	"branch"
kol	kollar	kolu	"warm"
kuız	kuızlar	kuızu	"daughter"
kul	kullar	kulu	"slave"
jel	jeller	jeli	"wind"
øl	gøller	gøly	"sea"
diş	dişler	dişi	"tooth"
gyl	gyller	gyly	"rose"

How would you use features to explain the choice of /lar/ vs. /ler/ in the plural, and /i y u u/ (i.e. you get /lar/ in the context of ... etc.)?